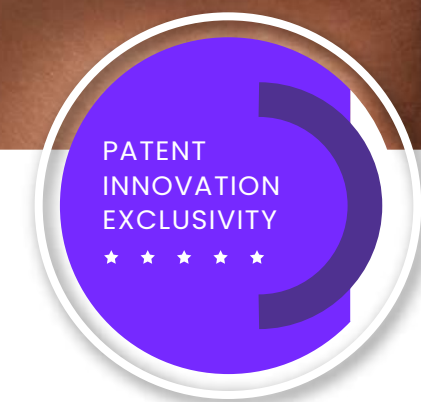




TRICO BOOSTER®

- Biomimetic reproduction for hair growth
- Reduction of the telogen phase in existing hair and activation of the anagen phase in the follicular structure without a shaft.



MOLECULAR BIOMIMETIC RECIPE CONTAINING STRATEGIC GROWTH FACTORS FOR EFFECTIVE HAIR GROWTH.

Composition of growth factors incorporated into a high-performance delivery system, SISTEMA[®] for bio-guided action, to act directly on the target cellular structures of the hair follicle bulb.

TRICO BOOSTER[®] MECHANISM OF ACTION

Increased expression of key proteins in the tyrosine kinase pathway (growth factor receptor). Activates the signal transduction of strategic growth factors, sustaining protein expression, inducing a virtuous "inside cells" activation cycle of players/messengers that feedback the production of other growth factors for maintaining communication between the cells of the hair matrix, the dermal papilla, and vascular endothelial cells.

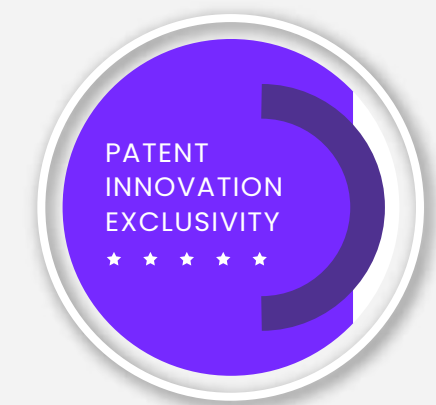
**Note:* It's important to highlight that the hair follicle/hair bulb is composed of two compartments, the epidermal (epithelial) and the dermal (mesenchymal), and its formation and structuring occur through a coordinated and complex communication/crosstalk between dermal cells that act as inducers/stimulators of epithelial cells. The mesenchymal compartment consists of specialized fibroblasts divided into the dermal papilla (DP), located at the proximal end of the hair follicle and surrounded by matrix cells, and the dermal sheath (DS), considered a reservoir of dermal/mesenchymal cells (9).

INDICATION (TOPICAL USE FROM 1% TO 3%):

- Telogen effluvium - acute hair loss (loss of more than 100 hairs per day).
- Anagen effluvium - abnormal hair loss during the growth phase.
- Androgenetic alopecia.
- Alopecia areata.

MOLECULAR RECIPE – WE WORK BETTER TOGHETER

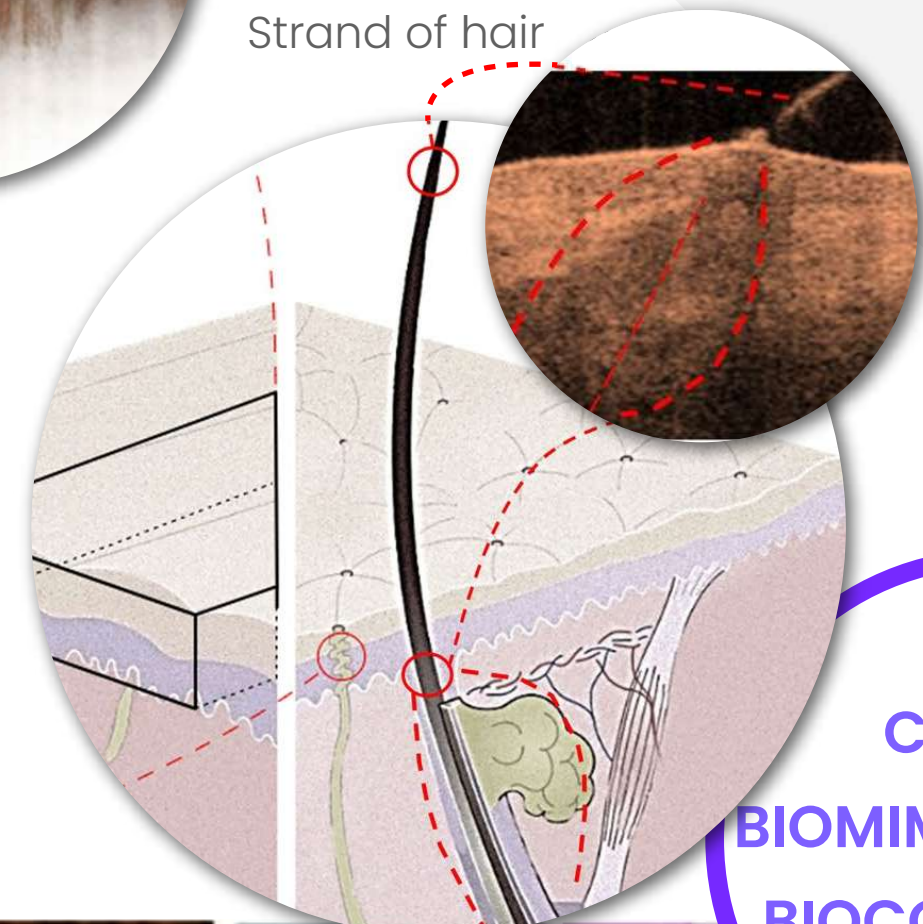
- ↑ SAMBAS CAPIL BOOST 1 AND CAPIL BOOST 2 (keratinocyte growth factors) - activation of the dialogue between the dermis (production) and hair epidermis (action).
- ↑ SAMBA IGF-1 (insulin-like growth factor 1) - stimulation of mitotic activity in the hair matrix.
- ↑ SAMBA VEGF (vascular endothelial growth factor) - tissue oxygenation and nutrition through the process of angiogenesis



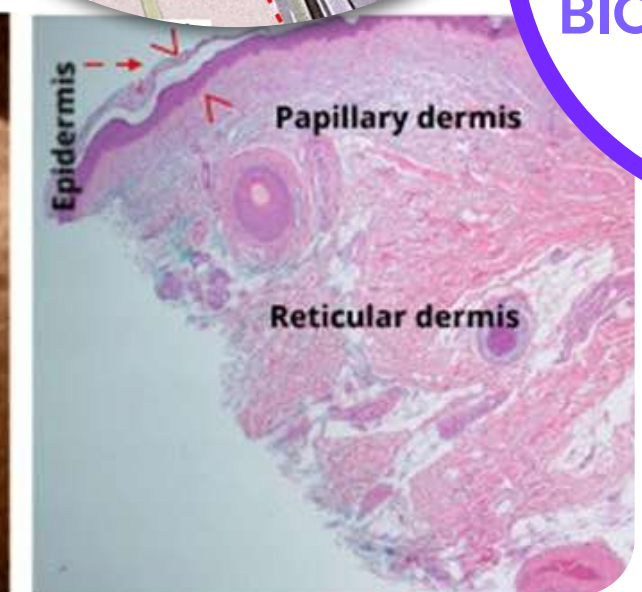
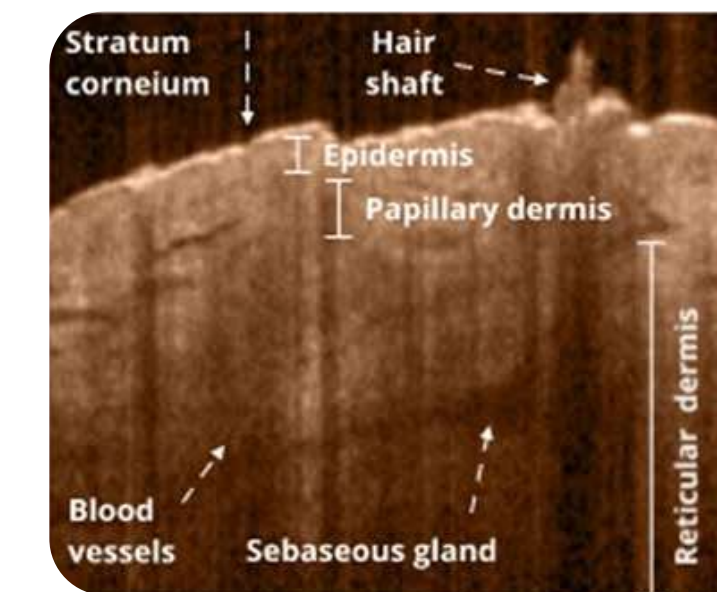
Representation 3D Skin



Strand of hair



CHOICE BIOMIMETICS AND BIOCOMPATIBLE



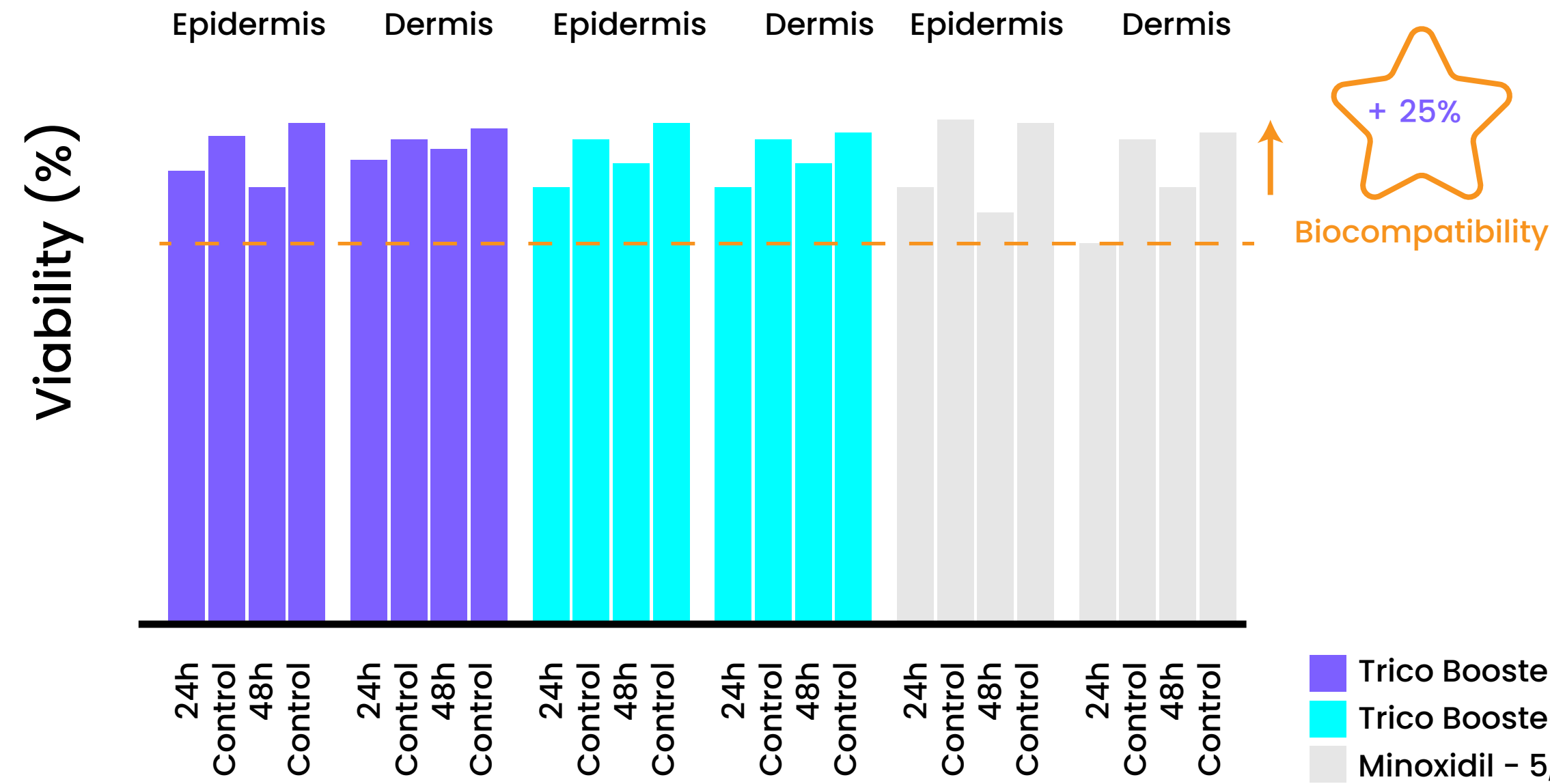
Adabi et al, 2017.

TESTES *IN VITRO* DE BIOCOMPATIBILIDADE - SEGURANÇA PARA AS CÉLULAS DO FOLÍCULO PILOSO

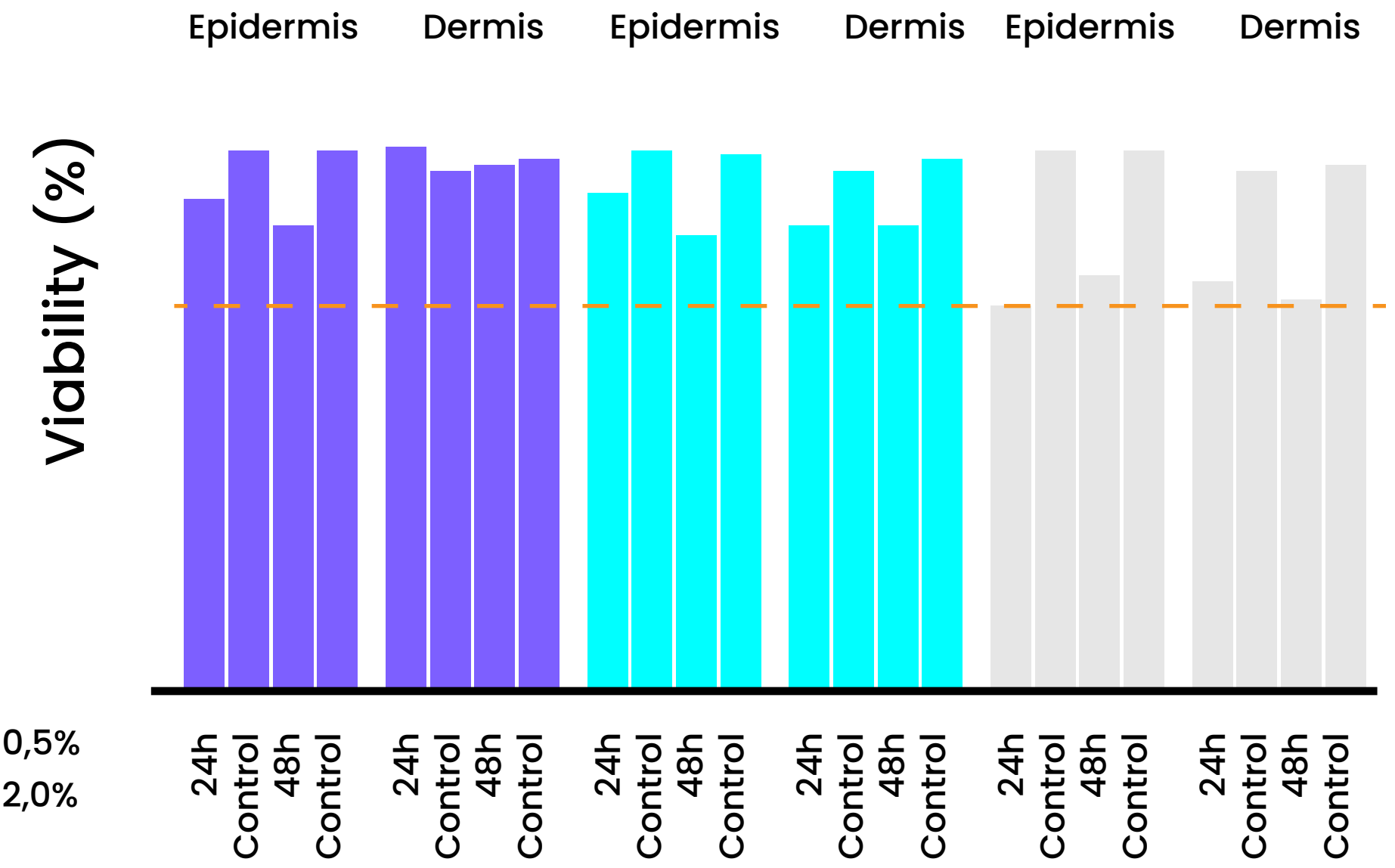


TRICO BOOSTER®

Cellular Viability by MTT reduction



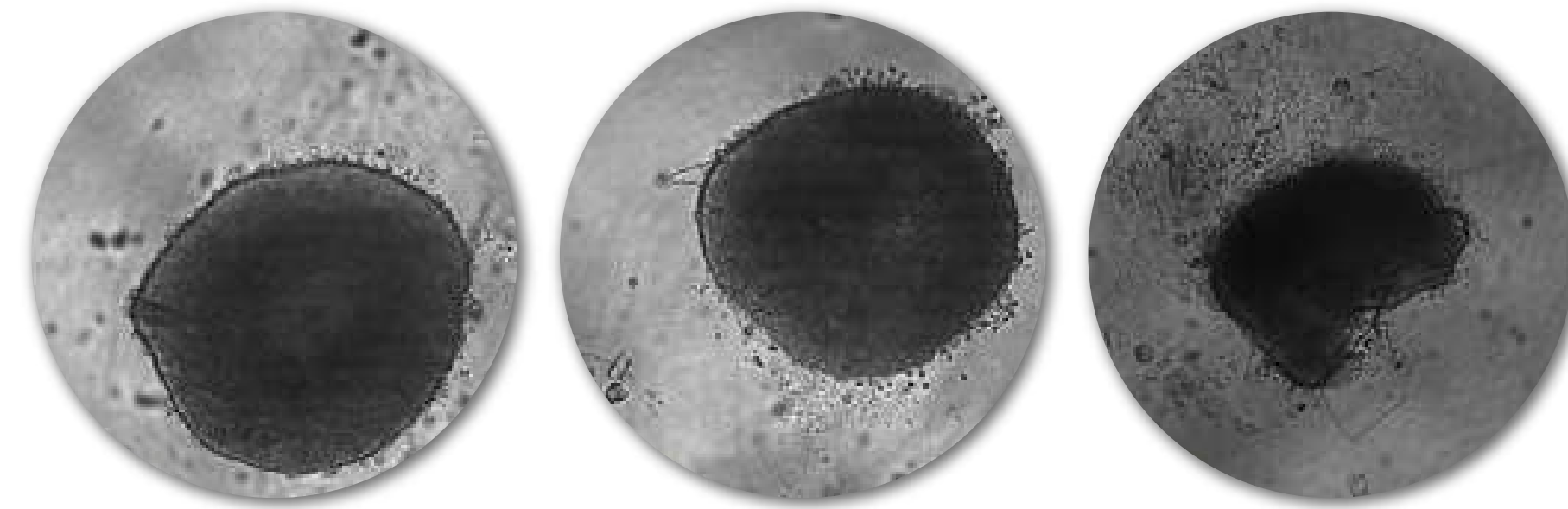
Cell Viability by Neutral Red



Trico Booster PLUS HYALURONIC ACID - Analysis of Cell Viability in Keratinocytes/Epidermis and Human Skin Fibroblasts (HFF-1) by MTT Reduction and Neutral Red Dye Incorporation in Lysosomes. Treatment with Samba® CAPIL BOOST 2 plus hyaluronic acid (1%) was separately and independently performed according to the conditions of each cell type. Separately, the market benchmark solution/minoxidil was tested under the same conditions, at a dose of 5%. The analyses were monitored for 24h and 48h, where Samba® CAPIL BOOST 2 plus hyaluronic acid demonstrated safety and biocompatibility, superior to minoxidil. For the MTT reduction test, values below 70% cell viability are considered toxic. Experiments were performed in triplicate. The statistical test used was t-test (* \leq 0.001, Samba® CAPIL BOOST 2 plus hyaluronic acid 24h and 48h versus control) GraphPad PRISM 5.0 (La Jolla, CA).



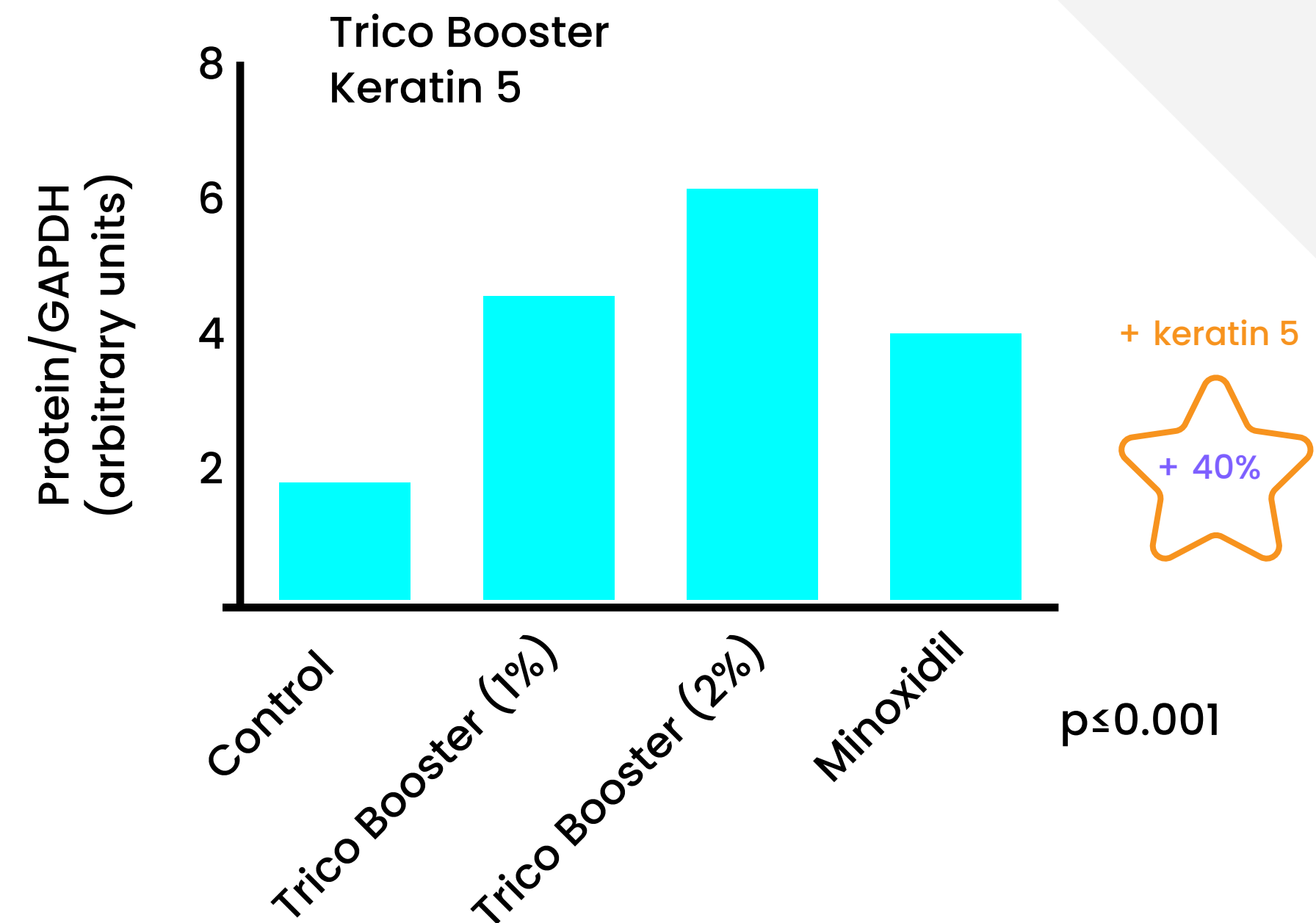
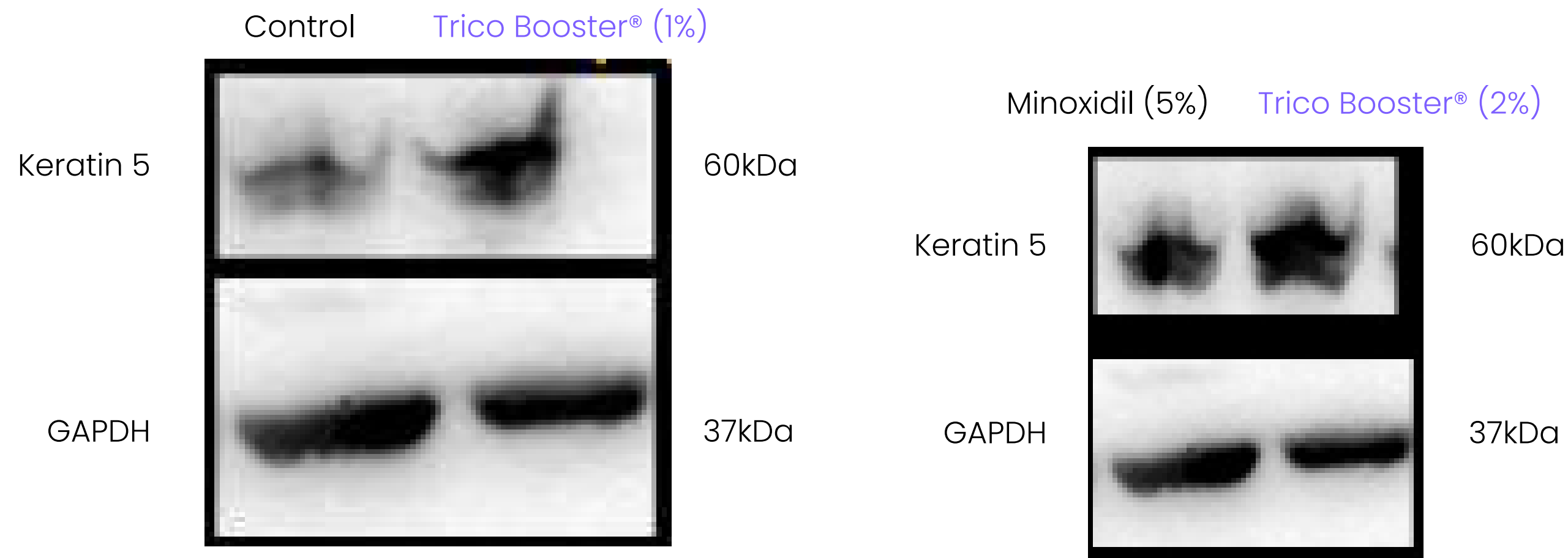
KERATIN ACTIVATES HAIR GROWTH



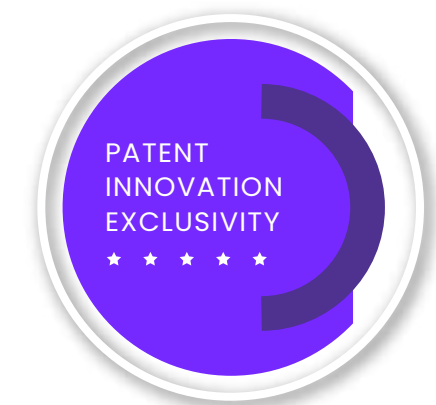
Day 72h**Trico Booster[®] (1%) Day 72h**Trico Booster[®] (2%) Day 72h minoxidil (5%)

TESTES IN VITRO

Expression of effective mediators in hair growth through cellular signaling pathway detected from the epidermis-dermis dialogue in the presence of **Trico Booster**.

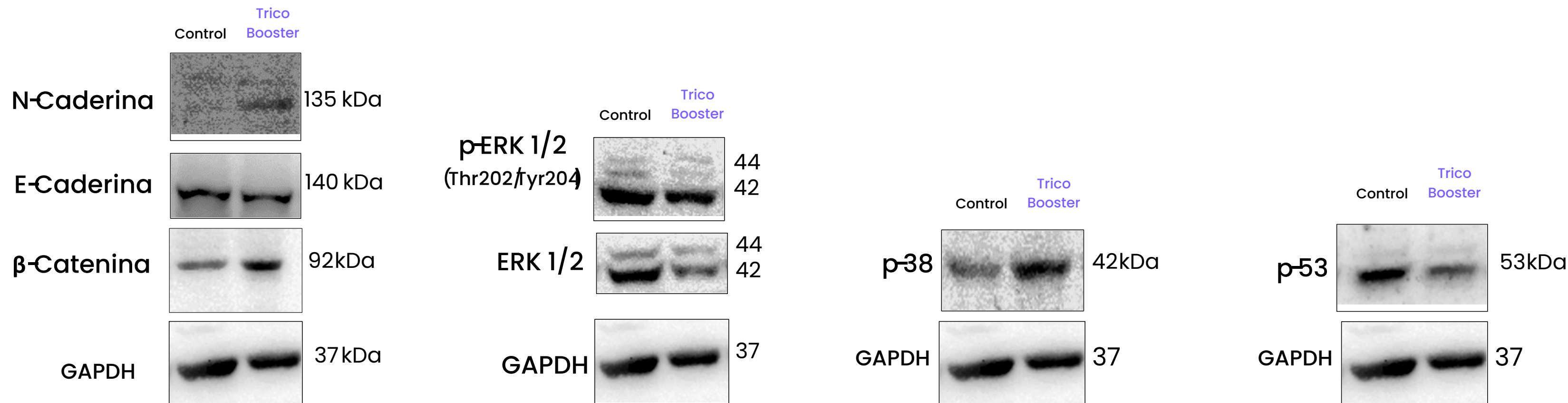
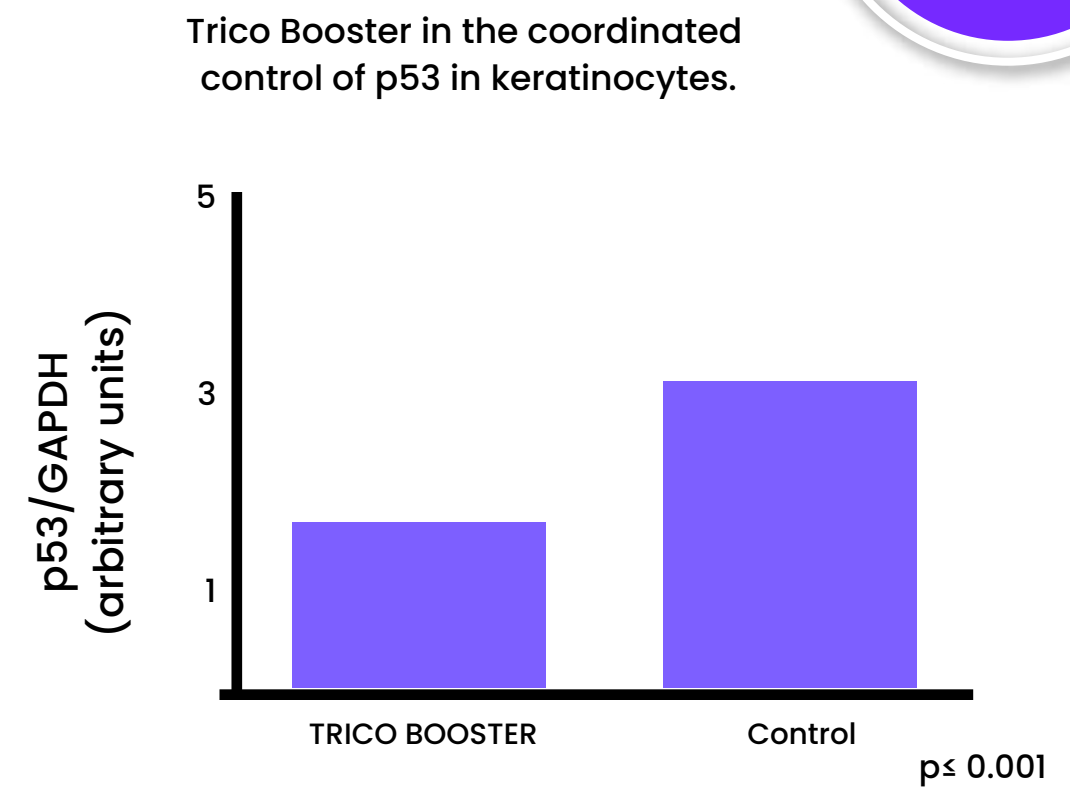
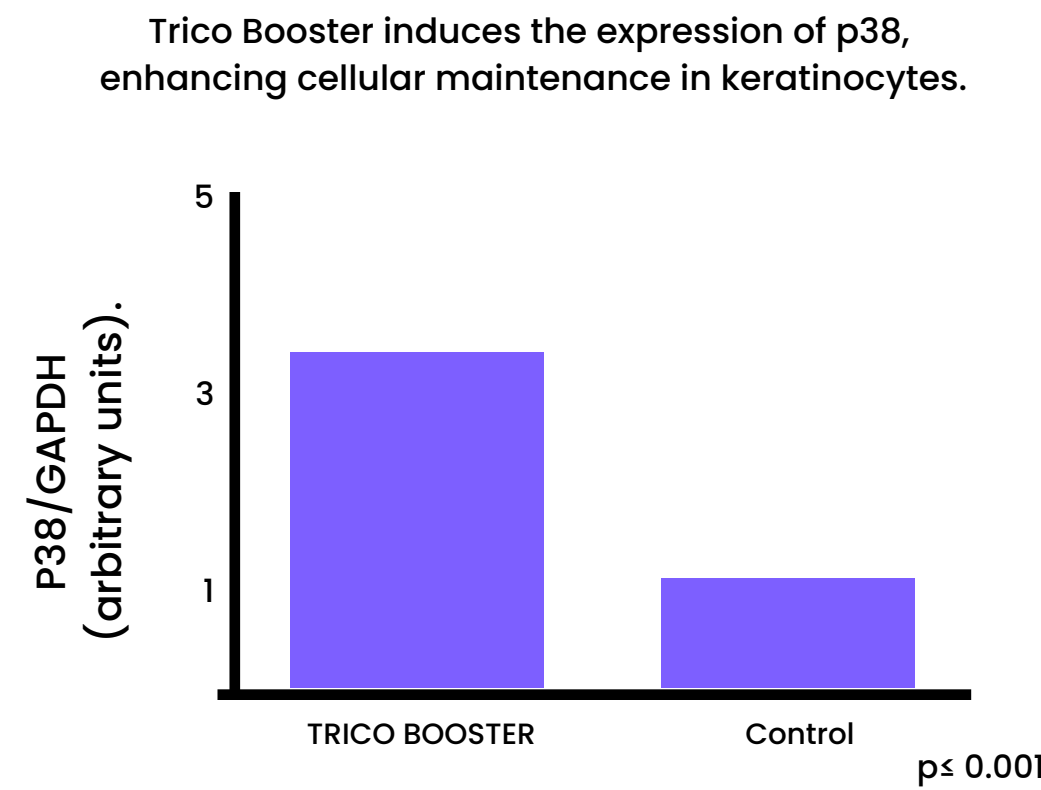
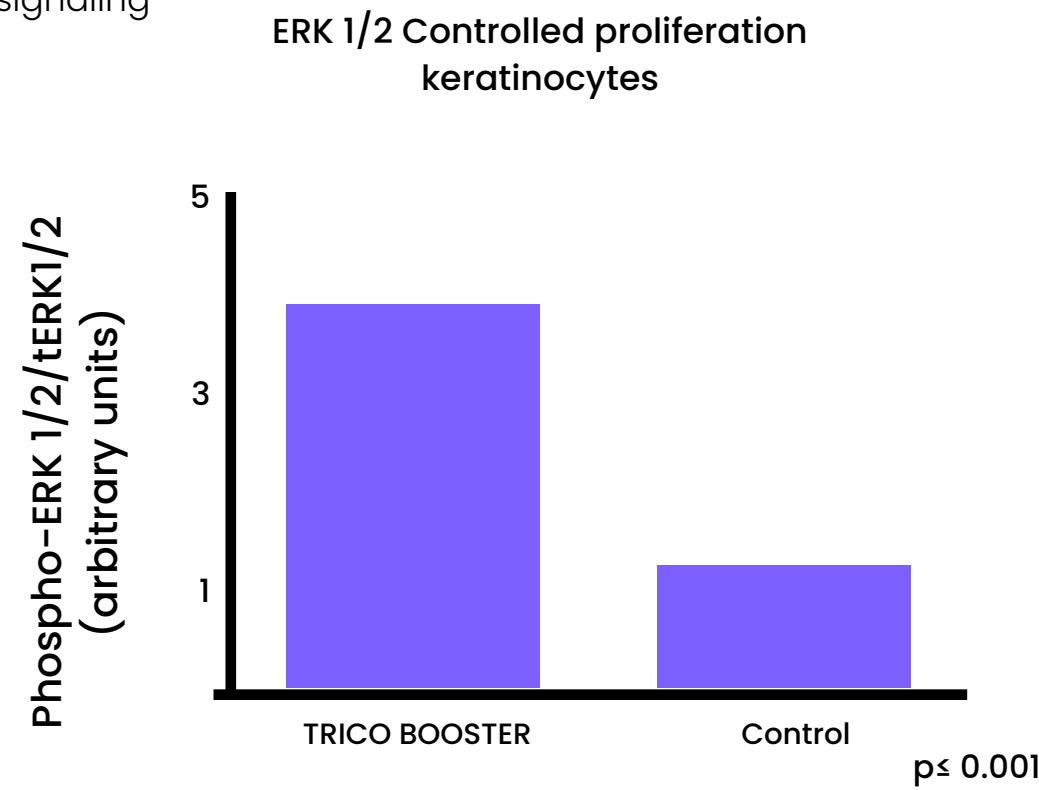
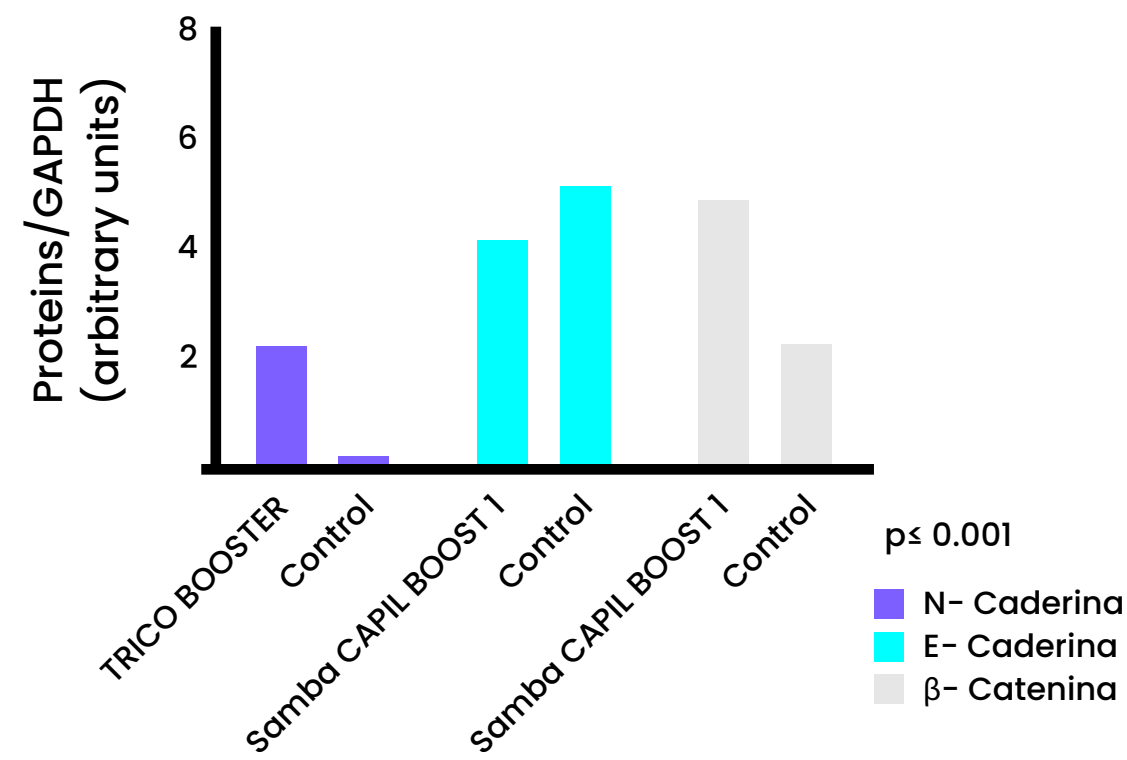


Trico Booster plus hyaluronic acid induces an increase in the expression of keratin 5, an intermediate keratin filament that promotes connection between the layers of the skin and reflects as a benefit in hair strength. Analysis performed on epidermal keratinocytes (3D cellular model, spheroids). The spheroids were exposed to Samba[®] CAPIL BOOST 2 plus hyaluronic acid (1% to 2%) for 72 hours. Subsequently, the cells were lysed, and the monoclonal antibody marker for keratin 5 was assessed by western blot. GAPDH was used as a normalizer and endogenous control. Statistical analysis was conducted using ANOVA GraphPad. Representative images from three independent experiments.



Trico Booster® promotes hair growth through the activation of crucial signaling pathways from the perspective of keratinocytes.

Trico Booster® promotes hair growth through the activation of crucial signaling pathways from the perspective of keratinocytes.



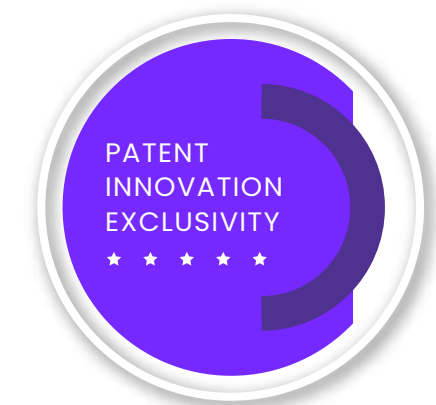
Trico Booster plus hyaluronic acid is effective in activating the Wnt/β-catenin, MAPK signaling pathways, such as the ERK pathway (cell proliferation), and p38 (cell maintenance) through interaction with its receptor in epidermal keratinocytes (3D cellular model, spheroids). The cells were exposed to Samba® CAPIL BOOST 2 plus hyaluronic acid (2%) for 48 hours. Subsequently, the cells were lysed, and the markers N-cadherin, E-cadherin, β-catenin, phospho ERK ½, total ERK ½, p38, and p53 (monoclonal antibodies) were assessed by western blot. GAPDH was used as a normalizer and endogenous control. Statistical analysis was conducted using ANOVA GraphPad. Representative images from three independent experiments.

TESTES IN VITRO

Expression of effective mediators in hair growth via cellular signaling pathway detected from the epidermis-dermis dialogue in the presence of TRICO BOOSTER.

TRICO BOOSTER[®] PLUS HYALURONIC ACID HIGH stability

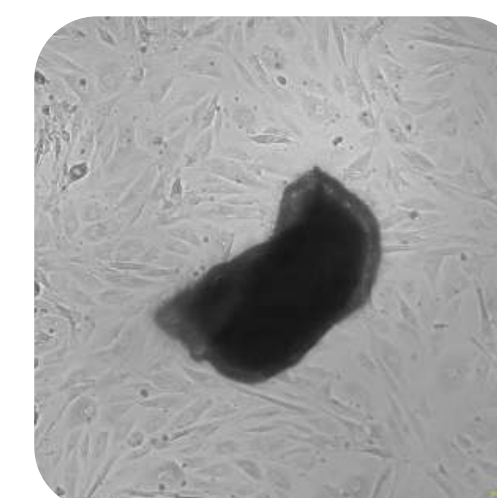
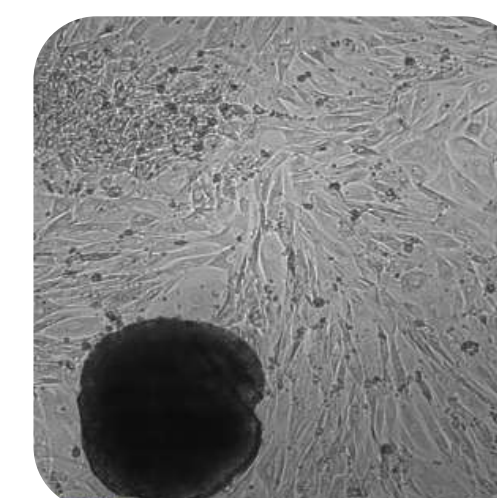
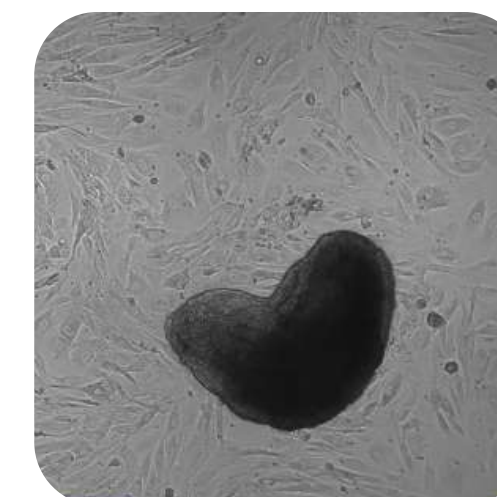
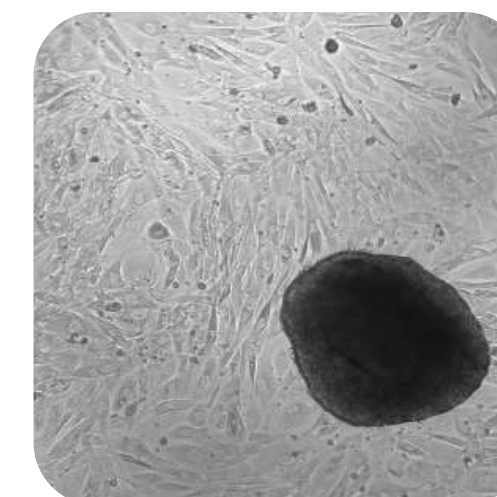
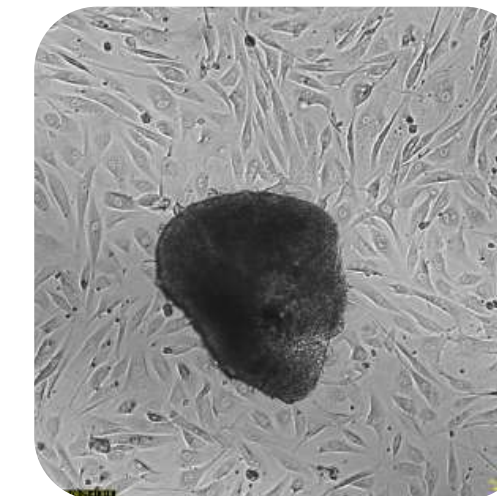
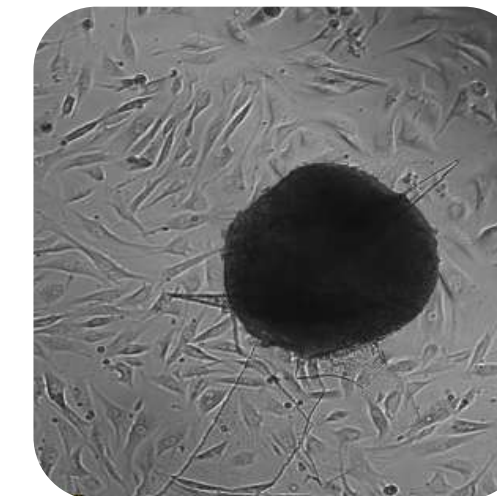
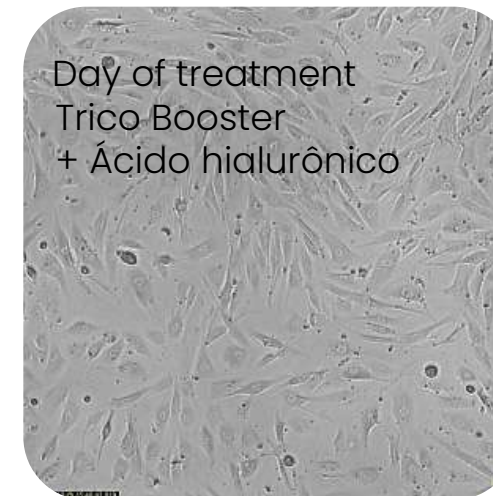
Interaction between epidermal keratinocytes and dermal fibroblasts with extracellular matrix production induced by Trico Booster plus hyaluronic acid.



Field of vision:
surroundings of the spheroid

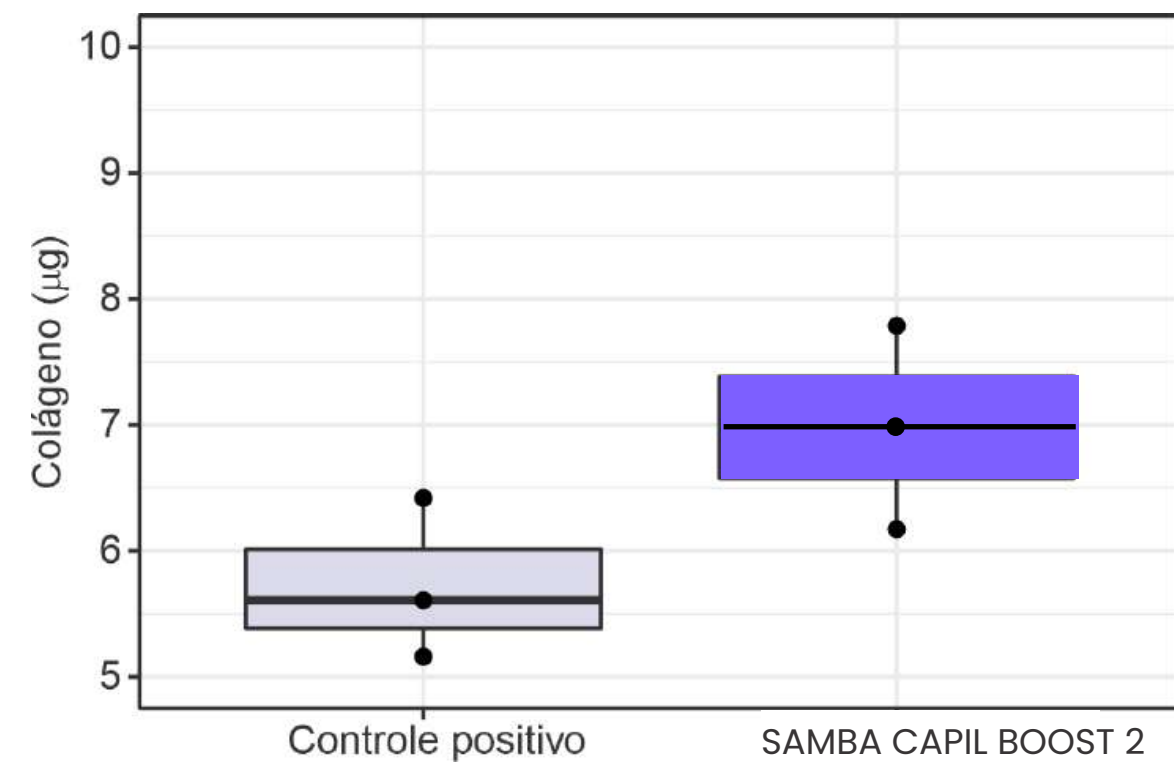
Trico Booster
(2%)

Minoxidil
(5%)



+ 140%

Trico Booster
plus hyaluronic acid + collagen



Trico Booster plus hyaluronic acid - Analysis of cell proliferation and renewal of dermal fibroblasts (HFF-1) and epidermal keratinocytes (HaCat) in a 3D/spheroid co-culture system, under the treatment of 2% Samba[®] CAPIL BOOST 2 plus hyaluronic acid, control with supplemented medium without treatment, with laminin coating and hyaluronic acid, for the quantification of type I collagen synthesis. Formation of skin keratinocyte spheroids in a 'feeder' system with skin fibroblasts (support and feeding bed), 2D and 3D co-culture monitored for 4 days (13).

CLINICAL EFFECTIVENESS STUDY – PROOF OF BIOMIMETIC STIMULUS OF HAIR GROWTH

IN VIVO test

Thirty volunteers, both men and women aged between 18 and 50, were assessed to evaluate the effectiveness in improving hair growth through the use of a hair tonic containing Trico Booster[®], with a visual comparative photographic analysis against minoxidil. In the initial assessment, D=0, photographic images were acquired, and the same process was repeated after a 30-day period, at D=30

TRICO BOOSTER[®]

0 days, Test Product

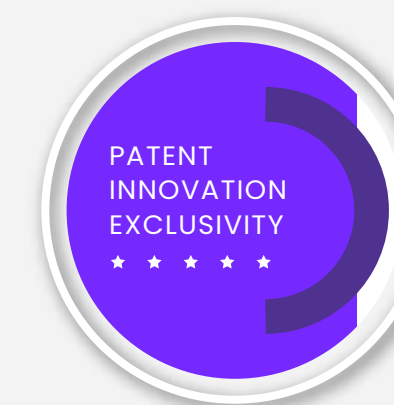


30 days, Test Product



PROVEN CLINICAL EFFICACY

TRICO BOOSTER[®] Glia Innovation with Sambas growth factors



MINOXIDIL 5%

0 days, Benchmark



30 days, Benchmark





TRICO BOOSTER®

0 days, Test Product



30 days, Test Product



PROVEN CLINICAL EFFICACY

TRICO BOOSTER® Glia Innovation with Sambas growth factors

MINOXIDIL 5%

0 days, Benchmark



30 days, Benchmark

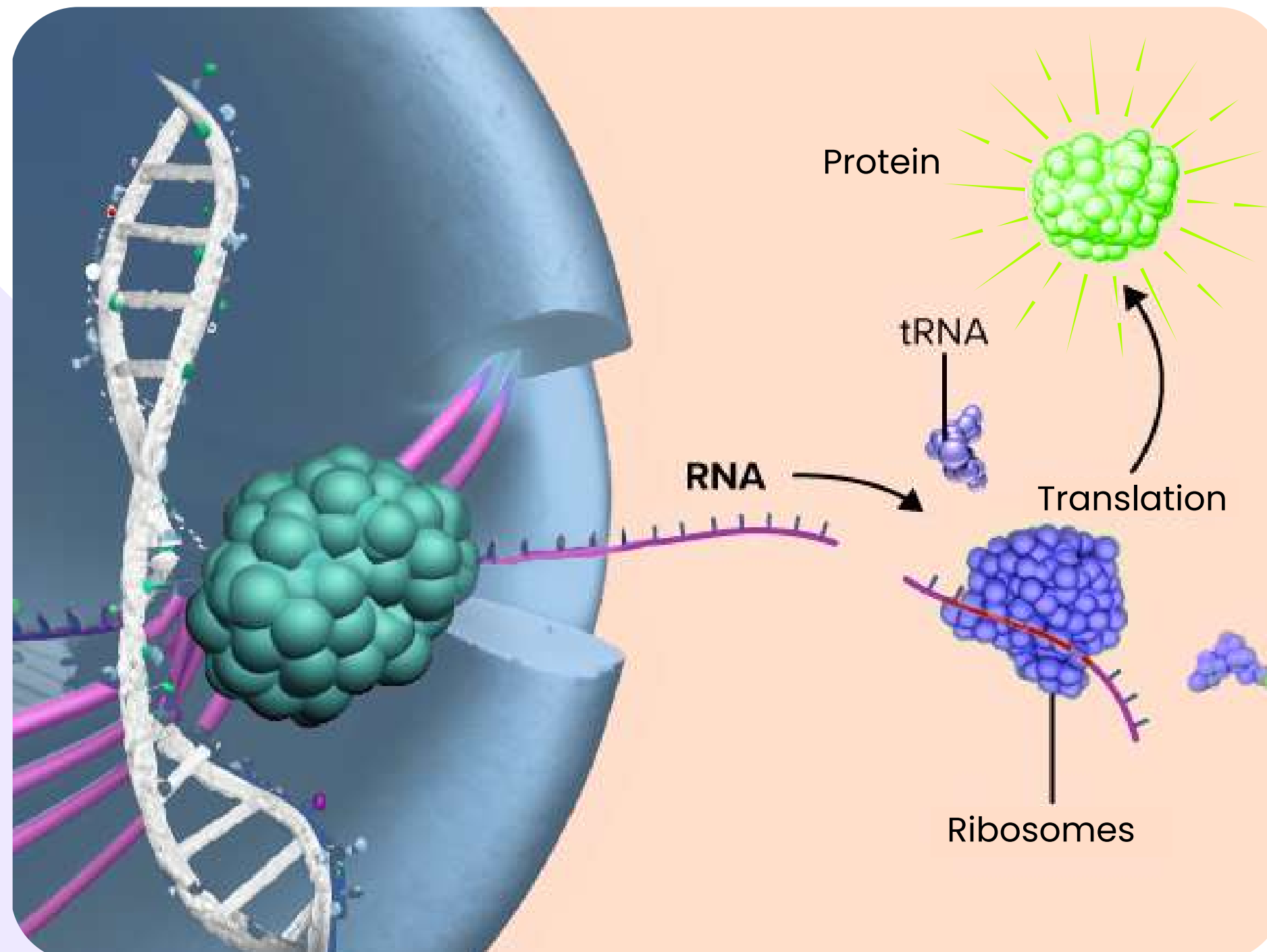




Learning from Glia Innovation about Gene Expression and Protein Expression

The human body is an incredible and extraordinary feat of biological engineering. When in perfect health, it operates with a magnificent and astonishingly precise timetable, navigating amidst the "chaos" and "molecular crowding," consistently fulfilling the defined objectives of its original design.

However, in adverse conditions, such as alopecia, processes need to be reorganized or reactivated, and TREATMENT for this condition triggers stimuli through active ingredients (like those found in Trico Booster), which initiate a sequence of interpretations by cells. These cells then organize, govern, and execute interactions among their subcomponents, aiming for the restoration of hair growth or even the cessation of abrupt hair loss.



In this scenario, a question arises:

What is the best tool to measure/quantify these actions determined by cells in response to a stimulus, as in the treatment of hair loss?

We know that genetic information stored in DNA (nucleus) is translated/decoded into proteins with the intermediary of mRNA (translation process in the cytoplasm). These proteins are directly involved in almost all life processes, performing various biological functions. We also know that, from the process of translation through mRNA expression to protein synthesis, it takes time, and often mRNA expression does not accurately reflect the real condition of protein synthesis responsible for biological action. This is because the cell will only produce the protein when needed, avoiding unnecessary energy expenditure (consumption of ATP). Protein synthesis consumes a relatively large amount of ATP, about 50% of all cellular energy, while mRNA expression consumes only 10%. Thus, the cellular machinery rationally manages protein synthesis, taking into account protein stocks and ATP consumption (Liu et al., 2016).

Glia Innovation Procedure: We understand that the translation and protein synthesis depend on different intrinsic factors, such as cell type and the presence of conditions, or extrinsic factors, such as environmental and nutritional factors, which can alter the protein synthesis profile. Since translation and protein synthesis are space-time control processes, it is prudent to consider that the same gene or category of genes may have very different mRNA-protein correlations in different cell types and adverse conditions. Therefore, the strategy of quantifying protein expression (by western blot, whether total or phosphorylated) to assess the effectiveness of an active ingredient in skin tegumentary tissue conditions is effective and reliable, following Glia's innovative approach.



Hair Growth Tonic **Trico Booster[®]**

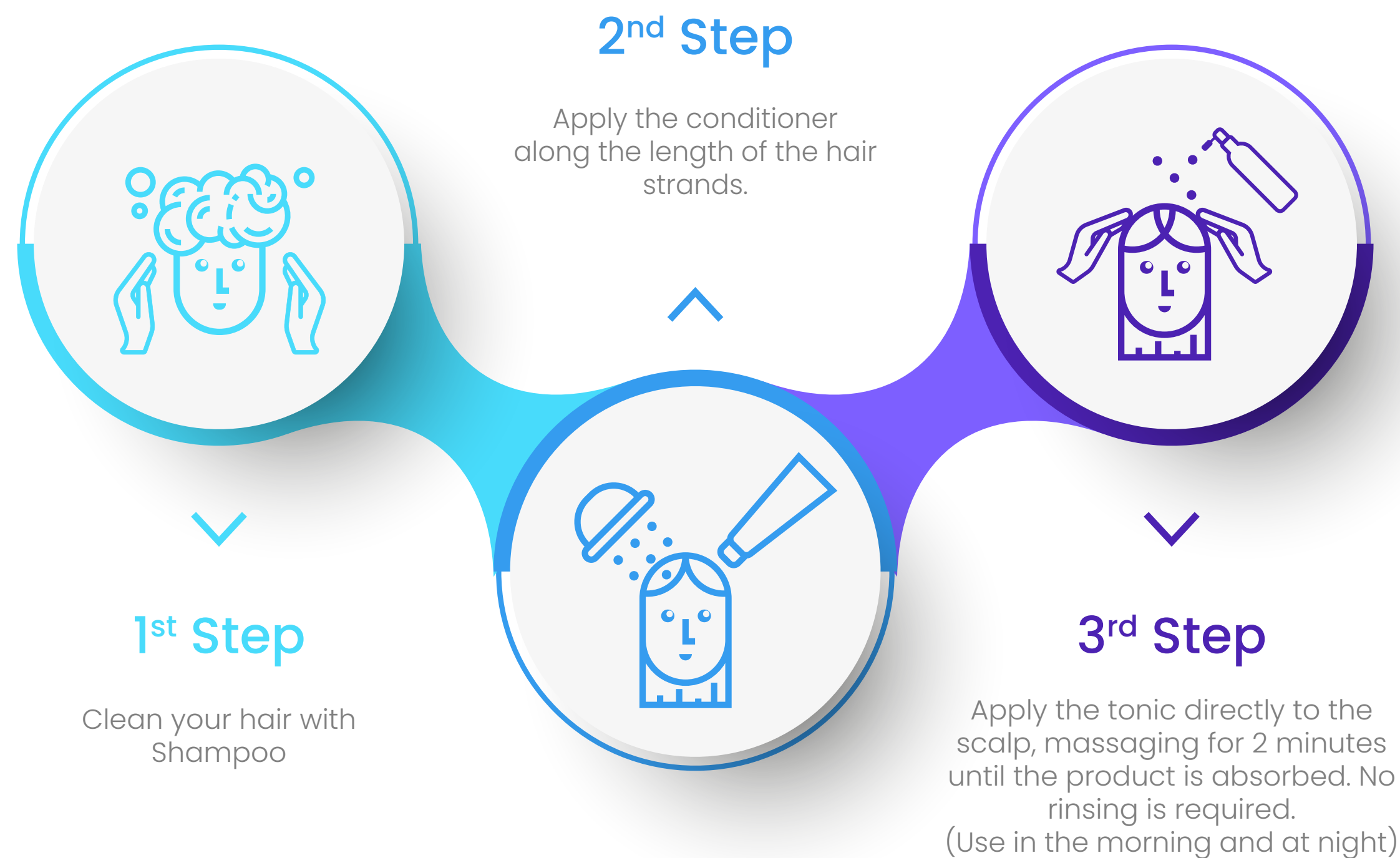
PRODUCTS	%
PHASE A	
WATER	QSP
EDTA DISSÓDICO	0.10%
GLYCERIN	1.00%
JABORANDI EXTRACT	0.50%
D-PANTENOL	0.50%
TRANSCUTOL	3.00%
PHASE B	
SAMBA CAPIL BOOST 2	2,00%
SAMBA VEGF	0,50%
SAMBA IGF	0.50%
SAMBA COPPER PEPTIDE	0.50%
LIPE CAFFEINE	1.00%
NANOXENOL	5.00%
SAMBA QUERCETIN	0.50%
PHASE C	
WATER SOLUBLE FRAGRANCE	0.40%
PHASE D	
OPTIPHEN	0,8

FORMULATIONS

Trico Booster Glia Innovation: A biomimetic solution that solubilizes and enhances ingredients for hair growth by stimulating the production of Samba CAPIL BOOST 1 (FGF-7) and Samba CAPIL BOOST 2 (FGF-10). It undergoes stability tests (in-house Glia Innovation) and allergenicity tests (Allergisa).

Dosage: Apply to affected areas or the entire scalp twice a day or as directed by a healthcare provider.

Panel for biomimetic hair growth treatment – HAIR Science
TRICO BOOSTER – OUR IMPACT BEGINS IN REGENERATIVE DERMATOLOGY
Strategic Biomimetic Growth Factors in Bio-Guided Delivery System – Samba System



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